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ISO 9001:2008
CONSULTANTS & TESTING CENTER

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NABL ACCREDITED AS PER ISO/IEC 17025:2005

Job No.: CECTC-BBMP-KRIDL-W.No.14-2015-16 16.04.2015

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	Improvements to roads & drains at Widia School East & North Road, C. Narayana Layout Cross Roads and Kuvempunagara Cross Roads in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	EE/DD/WO/371/2014-15 Dated: 31.03.2015
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	16.04.2015

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	375	379	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	76	80	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	299	
4	Aggregate Impact value = percent fines 100* (W_2/W_1) percent	20.27	21.11	**20.69**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note:

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Job No.: CECTC-BBMP-KRIDL-W.No.14-2015-16 17.04.2015

Specific Gravity And Water Absorption Test
IS: 2386 Part III

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	Improvements to roads & drains at Widia School East & North Road, C. Narayana Layout Cross Roads and Kuvempunagara Cross Roads in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	EE/DD/WO/371/2014-15 Dated: 31.03.2015
Type of Mix	Bituminous Concrete
Date of Testing	17.04.2015

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2055	1964	1993	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1300	1209	1238	
4	Weight of saturated surface dry aggregate in air	W_3 g	2033	2009	2008	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	733	800	770	
6	Weight of oven dried aggregate	W_4 g	2015	1995	1993	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.749	2.494	2.588	2.610
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.818	2.538	2.640	2.665
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.89%	0.70%	0.75%	0.78%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

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Job No.: CECTC-BBMP-KRIDL-W.No.14-2015-16 17.04.2015

Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	Improvements to roads & drains at Widia School East & North Road, C. Narayana Layout Cross Roads and Kuvempunagara Cross Roads in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	EE/DD/WO/371/2014-15 Dated: 31.03.2015
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	17.04.2015

Total Weight of Sample: **5500** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	532	9.67	9.67	90.33	79 - 100	
9.5	564	10.25	19.93	80.07	70 - 88	
4.75	715	13.00	32.93	67.07	53 - 71	
2.36	648	11.78	44.71	55.29	42 - 58	
1.18	653	11.87	56.58	43.42	34 - 48	
0.600	671	12.20	68.78	31.22	26 - 38	
0.300	635	11.55	80.33	19.67	18 - 28	
0.150	341	6.20	86.53	13.47	12 - 20	
0.075	438	7.96	94.49	5.51	4 - 10	

Total Weight of Sample: **4800** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	623	12.98	12.98	87.02	79 - 100	
9.5	472	9.83	22.81	77.19	70 - 88	
4.75	645	13.44	36.25	63.75	53 - 71	
2.36	515	10.73	46.98	53.02	42 - 58	
1.18	643	13.40	60.38	39.63	34 - 48	
0.600	518	10.79	71.17	28.83	26 - 38	
0.300	412	8.58	79.75	20.25	18 - 28	
0.150	321	6.69	86.44	13.56	12 - 20	
0.075	319	6.65	93.08	6.92	4 - 10	

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Job No.: CECTC-BBMP-KRIDL-W.No.14-2015-16 17.04.2015

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

CLIENT	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, PIU, Bangalore.
NAME OF THE WORK	Improvements to roads & drains at Widia School East & North Road, C. Narayana Layout Cross Roads and Kuvempunagara Cross Roads in Ward No. 14, Bagalagunte, BBMP, Bangalore.
REFERENCE	EE/DD/WO/371/2014-15 Dated: 31.03.2015
SAMPLE I/D	Sample Supplied by Agency
DATE OF TESTING	17.04.2015

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	469	470
3. Weight of Asphalt and Mineral matter Extracted, g	31	30
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	31	30
7. Bitumen content in %	6.20	6.00
8. Average	**6.10**	

GRADATION AFTER EXTRACTION

TABLE - 1

SIEVE SIZE	Percent Passing, %		JOBMIX
mm	Sample 1	Sample 2	Gradation
19	100.00	100.00	100
13.2	96.50	89.55	79-100
9.5	77.95	78.40	70-88
4.75	55.40	56.25	53-71
2.36	45.15	46.10	42-58
1.18	41.65	38.55	34-48
0.6	36.20	35.15	26-38
0.3	23.15	22.55	18-28
0.15	17.85	16.80	12-20
0.075	6.10	5.75	4-10

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Job No.: CECTC-BBMP-KRIDL-W.No.14-2015-16 17.04.2015

TEST REPORT ON STABILITY OF MIX

Client	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	:	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	:	Improvements to roads & drains at Widia School East & North Road, C. Narayana Layout Cross Roads and Kuvempunagara Cross Roads in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	:	EE/DD/WO/371/2014-15 Dated: 31.03.2015
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	17.04.2015

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	10.30	9.65	9 Kn (min)
2	Marshal flow, mm	2.35	3.40	2 – 4
3	Percent air voids in Mineral Aggregate	14.20	13.55	13 – 15
4	Voids in Compacted Mix	5.15	4.70	3 – 6
5	Percent Voids filled with Bitumen	68.80	69.75	65 - 75
6	Density, g/cc	2.27	2.26	--

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